NOTES

1. For example, Doner (1991) and Borrus (1992).
2. Thurow (1992) develops a confrontational theme implying a zero sum rivalry. Encarnation (1992) in examining why Japanese sell more in the United States than Americans in Japan, examines this rivalry theme in the Southeast Asian region.
3. UNCTC (1992*a*, p. 20). In comparison, UNCTC estimated that U.S. and EC stocks each totalled US$370 billion and US$376 billion, respectively, with each accounting for about 27 per cent of the world stock (54 per cent taken together).
4. The source of these estimates is UNCTC (1992*a*, p. 20). The stock of inward FDI in Japan is based on data on outward investment from the six major home countries for foreign investment. This figure contrasts with Japanese sources, such as the Ministry of Finance and JETRO (1992), which report accumulated inward direct investment at around US$20 billion in 1991.
5. See, for example, Lawrence (1987) and Takeuchi (1989).
6. Saxonhouse (1986) provides an excellent example of such a reasoned argument.
7. Johnson (1982) and (1992).
8. The discussion in this paragraph is drawn from Pasuk (1990) Chapter 3.
9. For the same reason, inward FDI to Japan was also restricted; no earnings could be repatriated.
10. Some authors identify the 1980s as the "third" wave of outward investment, the second and much smaller wave having taken place after yen appreciation in 1978.
11. Morgan Guaranty Trust Company (1989, p. 12).
12. Volcker and Gyohten (1992, chapters 2 and 3) provide a detailed account of U.S. and Japanese policy-making during this period.
13. The discussion in this chapter draws on Irimajiri (1992).
14. For a concise summary of such policy reforms, see Asian Development Bank (1991, pp. 20–35).
15. The term "gravity coefficient" is used here to measure the intensity of trade linkages among the group of East Asian economies which are the focus of this study. The coefficients measure an economy's export share of the market relative to its share in total trade among the group. Thus,

$$A(i,j) = \frac{x(i,j)/x(t,j)}{x(i,t)/x(t,t)}$$

   where A(i,j) is the coefficient; the numerator is the exports from country i to country j relative to all exports, (x(t,j)), to country j from all other countries in the group. The denominator is the exports from country i to all countries in the group, (x(i,t)), relative to total exports within the group, (x(t,t)).
16. Fukusaku (1992, pp. 25–26).
17. Fukasaku (1992) also picks up such a significant relationship but interprets it in terms of the first of these two possibilities.

18. Because of the paucity of data on U.S. affiliates' procurement behaviour, local and third country procurement patterns cannot be compared and are omitted from the table.
19. Encarnation (1992), in an examination of Japanese-U.S. rivalry in trade and FDI, also found the behaviour of both affiliates to be quite similar in the Asian market.
20. Interview with the author, October 1992.
21. Personal interviews with industry officials and independent analysts in Tokyo in 1992.
22. GNP per capita estimates from World Bank (1992*b*) statistical tables.
23. Thorough and innovative studies of the determinants of inward FDI into Taiwan have also been reported by Tu (1990) and Chi and Tu (1992, pp. 142–71).
24. In this equation, the use of the lagged cumulated dependent variable as an independent variable might be expected to create a problem of auto-correlation. To test for this problem, Durbin's "h" statistic was calculated by regressing the OLS residual on the lagged residual and all the explanatory variables. No auto-correlation was found by this test. See Kennedy (1985) for further explanation of this test.
25. For a conceptual framework along these lines, applied in the area of macroeconomic policy, see Dobson (1991).

APPENDICES

APPENDIX A

Sources of Data on Foreign Direct Investment

There are two national sources of data on Japanese FDI: the balance of payment statistics of the Bank of Japan (BOJ) and notification data collected by the Ministry of Finance (MOF). BOJ statistics are compiled on actual investment transactions by Japanese residents, on a calendar year basis, in overseas branches, subsidiaries or associated companies in which Japanese parents' ownership exceeds 10 per cent. These data are available only in aggregate form, with no national or industrial breakdowns. MOF statistics, which do provide such breakdowns, are anticipatory, compiled at the time the Ministry is notified by firms of their intentions to invest, subject to approval of the host government. Because these data are collected before the transaction occurs, they overstate actual investment. U.S. Department of Commerce (U.S. DOC) data measures actual capital flows by U.S. firms that own at least 10 per cent of the voting equity of a foreign enterprise. This measure of FDI includes retained earnings.

Comparisons between Japanese and American foreign direct investment must, therefore, be made with caution and are best confined to general ratios and trends rather than to levels. Data from host governments also vary considerably because of the variety of methods used to track investment inflows. They are, therefore, of limited assistance in reconciling differences in home country data.

APPENDIX B

Intra-industry Trade in East Asia

1. *Indices of IIT*

Intra-industry trade ratios have been computed following the Gubel-Lloyd index, using U.N. trade data calculated at SITC (Rev.2) at 2- and 3-digit levels. For each industry (i), the intra-industry trade ratio, IITi, is calculated according to the Grubel-Lloyd measure (Grubel and Lloyd 1975):

$$\mathrm{IIT}_i = \{1 - \frac{\mathrm{abs}(x_i - m_i)}{(x_i + m_i)}\} \times 100$$

where x_i = exports of industry i,
m_i = imports of industry i.

An aggregate IIT index (IIT) is also constructed for each economy included in the study according to the following aggregation technique:

$$\mathrm{IIT} = \sum_i \mathrm{IIT}_i \times \frac{(x_i + m_i)}{X + M}$$

where X = total exports,
M = total imports.

The analytical relevance of this measure has been subject to criticisms based on the argument that arbitrary statistical classifications in the trade data do a poor job of reflecting actual 2-way exhanges. But as Fukasaku (1992, p. 27) has pointed out, studies show that simultaneous exports and imports remain quantitatively significant, even at 7-digit SITC levels.

2. *Determinants of IIT*

The theory of the determinants of IIT follows contributions of Linder (1961) and Lancaster (1980) who suggested, respectively, that intra-industry trade will increase with levels of economic development (because of increasing product differentiation) and with market size

(owing to economies of scale). Krugman (1980) pointed out that transportation costs will reduce the volume of such trade.

The analysis here follows Balassa (1986) who tested these and other theoretical propositions econometrically on cross-country data, and Fukusaku (1992) who analysed the determinants of IIT in manufactures among Pacific-Asian economies. Fukusaku's study is a cross-sectional cross-country analysis of determinants of IIT ratios in the years 1979 and 1988, using OLS and weighted least squares techniques.

3. *The Regression*

A. *Dependent Variable*

The dependent variable is a set of bilateral IIT ratios among the economies studied (including the United States and Canada), for SITC (Rev.2) 2-digit categories 500–1000 for the years 1985–89, inclusive. Thus,

$$\text{IIT}^* = \{1 - \frac{\text{abs}(x_{ij} - m_{ij})}{c_{ij} + m_{ij}}\} \times 100$$

and

$$iit_{ij} = \sum_{1=500}^{1000} \text{IIT}^* \times \frac{(x^1_{ij} + m^1_{ij})}{(x_{ij} + m_{ij})}$$

where

x_{ij} represents exports from country i to country j,
m_{ij} represents imports to country i from country j,
and 1 from 500 to 1000 represents SITC industries.

B. *Independent Variables*

Following Balassa and Fukusaku, independent variables were chosen that allow for empirical tests of the significance for IIT of relative differences in levels of economic development (measured by relative differences in per capita incomes between economies); differences in relative factor endowments (measured by share of primary commodities in primary exports); distance (measured by shipping distances

between major ports); and by a number of trading arrangements and peculiarities of trade. These independent variables are defined as follows:

YPC = relative per capita income differences, where

$$ypc_{ij} = \frac{\text{abs}(\text{gnppc}_i - \text{gnppc}_j)}{(\text{gnppc}_i + \text{gnppc}_j)/2}$$

and gnppc = gross national product per capita in countries i and j;

RFE = relative factor endowments, where

$$\text{rfe}_{ij} = \frac{\text{abs}(1/\text{s}_i - 1/\text{s}_j)}{1/\text{s}_j}$$

and rfe_{ij} = factor endowments of country i relative to country j;

s = the share of primary commodities in total exports of country i or j;

DIS = shipping distance from country i to country j, measured in logs;

DUMMY VARIABLES

D1 ASEAN preferential trade arrangement
D2 Canada-U.S. preferential trade arrangement
D3 Entrepôt trade in Hong Kong
D4 Entrepôt trade in Singapore

C. *Expected Signs of Coefficients*

Coefficient	Sign
YPC	–
RFE	–
DIS	–
D1	+
D2	+
D3	+
D4	+

D. *Methodology*

The sample includes 5 years of data and 11 countries. Ordinary least squares (OLS) are used.

Further methodological limitations are that, while our dependent variable is an aggregate measure of IIT in manufacturing industries across economies and through time, the independent variables are country-level variables, and therefore serve only as rough indicators of factors determining IIT in particular industries.